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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,780	06/20/2000	Alessandro Cesare Callegari	YOR-9-2000-0010	6159

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Paul D. Greeley, Esq.
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
One Landmark Square
10th Floor
Stamford, CT 06901-2682

EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/597,780

Applicant(s)

CALLEGARI ET AL.

Examiner

HOAN C. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-9,11-33 and 37-40 is/are pending in the application.
- 4a) Of the above claim(s) 4-8,14-20 and 22-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,9 and 37-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 March 2005 has been entered.

Applicant elects without prejudice Group A (claims 1, 9 and 37) on Response filed on 27 October 2003. Applicant canceled claims 2-3, 21 and 34-36. Applicant added new claims 38-40. Claims 4-8, 14-20, 22-33 are withdrawn. Claims 1, 9, 11-13 and 37-40 consider in this office action.

Response to Arguments

Applicant's arguments with respect to amended claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claims 11-13 and 40 are objected to because of the following informalities:

- Claim 11 is a method claim that cannot depend on a device claim 40.

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- Claims 12-13 are the device claims that cannot depend on a method claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Callegari et al. (US6493050B1).

Callegari et al. teach (Fig. 9, col. 6 line 12-48) a method of preparing a multi-domain liquid crystal display comprising the steps of

- depositing a dry alignment made of hydrogenated diamond-like carbon (hydrogenated DLG film) on a substrate,
- partitioning said dry deposited layer into a plurality of domain areas to fabricate a multidomain display (col. 6 lines 25-31),
- aligning said dry deposited layer using mechanical mask (mask 966).

wherein

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- said alignment is achieved by exposing said dry deposited layer to at least a first particle beam and a second particle beam, where a first particle beam and a second particle beam use the same ion.
- a direction of said first particle beam with respect to said dry deposited layer is different than a direction of said second particle beam with respect to said dry deposited layer (col. 6 lines 29-31).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 9, 37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lien et al. (US6493050B1) in view of Callegari et al. (US6493050B1).

Lien et al. teach (Fig. 9A-B, col. 6 lines 8-10) a multi-domain liquid crystal display comprising

- a bottom substrate 104 having a first surface;
- a transparent conductive layer (pixel electrodes 138, thin film transistors (not shown) and other display circuitry in bottom substrate, which should consider as the in-plane switching) disposed over said first surface of said bottom substrate.
- a top substrate 102 having a second surface;

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- a color filter layer (color filter layer 106 and color filter stacks 112) disposed over a surface of the top substrate;
- a transparent conductive layer 118 disposed over said color filter;
- a first dry deposited layer 107 over said first transparent conductive layer
- a dry deposited layer 107 made of over said second transparent conductive layer; said second dry deposited layer being spaced adjacent to and facing said first dry deposited layer;
- a plurality of uniformly sized spacer 108 distributing within said space;
- a liquid crystal material 101 disposed in the space therebetween;

wherein

- each of said first dry deposited layer and said second dry deposited layer is divided into a plurality of pixels each having a boundary and at least two domains (col. 6 lines 40-41);
- each of said multi-domain, dry deposited layers is obtained by a mechanical mask (photolithographic mask; col. 4 lines 41-42);
- said dry deposited layers are exposed to at least a first particle (ion) beam and a second particle (ion) beam (col. 6 lines 51-54), where a first particle beam and a second particle beam use the same ion, which is selected from the group consisting argon, nitrogen, oxygen and a mixture thereof.

However, Lien et al. fail to disclose

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(a) the dry deposited layer made of material selected from the group consisting of hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO₂), glass, silicon nitride (Si₃N₄), alumina (Al₂O₃), cerium(IV) oxide (CeO₂), tin oxide (SnO₂), zinc titanate (ZnTiO₂) and a combination thereof;

(b) a direction of said first particle beam with respect to said dry deposited layer is different than a direction of said second particle beam with respect to said dry deposited layer.

Callegari et al. teach

(a) the dry deposited layer made of material selected from the group consisting of hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO₂), glass, silicon nitride (Si₃N₄), alumina (Al₂O₃), cerium(IV) oxide (CeO₂), tin oxide (SnO₂), zinc titanate (ZnTiO₂) and a combination thereof for requiring fewer steps and less cost to manufacture (col. 3 lines 51-58);

(b) a direction of said first particle beam with respect to said dry deposited layer is different than a direction of said second particle beam with respect to said dry deposited layer for resulting multidomain device (col. 6 lines 29-31).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display as Lien et al. disclosed with (a) the dry deposited layer made of material selected from the group consisting of hydrogenated diamond-like carbon, amorphous hydrogenated

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silicon, silicon carbide (SiC), silicon dioxide (SiO₂), glass, silicon nitride (Si₃N₄), alumina (Al₂O₃), cerium (IV) oxide (CeO₂), tin oxide (SnO₂), zinc titanate (ZnTiO₂) and a combination thereof for requiring fewer steps and less cost to manufacture as taught by Callegari et al. (col. 3 lines 51-58); (b) a direction of said first particle beam with respect to said dry deposited layer is different than a direction of said second particle beam with respect to said dry deposited layer for resulting multi-domain device as taught by Callegari et al. (col. 6 lines 29-31).

2. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Callegari et al. (US6493050B1) as applied to claim 1 in view of Samant et al. (US6313896B1).

Callegari et al. fail to disclose the mechanical mask method comprises:

- bombarding the alignment layer with said first particle beam,
- masking the alignment into first domain areas and second domain areas of the alignment with a mask; and
- selectively bombarding the alignment with an said second particle beam through said mask.

Samant et al. disclose the mechanical mask method comprises:

- bombarding the alignment layer with said first particle beam,

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- masking the alignment into first domain areas and second domain areas of the alignment with a mask (col. 4 lines 6-7 and 16-21); and
- selectively bombarding the alignment with an said second particle beam through said mask (col. 4 lines 54-67).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the mechanical mask method as Lien et al. disclosed with steps of (1) bombarding the alignment layer with said first particle beam, (2) masking the alignment into first domain areas and second domain areas of the alignment with a mask; and (3) selectively bombarding the alignment with an said second particle beam through said mask for creating multiple alignment layer domains without rotation of the substrate as taught by Samant (col. 4 line 65 to col. 5 line 1).

3. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lien et al. (US6493050B1) in view of Callegari et al. (US6493050B1) as applied to claims 9, 37 and 40 in view of Samant et al. (US6313896B1).

Lien et al. and Callegari et al. fail to disclose the mechanical mask method comprises:

- bombarding the alignment layer with said first particle beam,
- masking the alignment into first domain areas and second domain areas of the alignment with a mask; and

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- selectively bombarding the alignment with an said second particle beam through said mask.

Samant et al. disclose the mechanical mask method comprises:

- bombarding the alignment layer with said first particle beam,
- masking the alignment into first domain areas and second domain areas of the alignment with a mask (col. 4 lines 6-7 and 16-21); and
- selectively bombarding the alignment with an said second particle beam through said mask (col. 4 lines 54-67).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the mechanical mask method as Lien et al. disclosed with steps of (1) bombarding the alignment layer with said first particle beam, (2) masking the alignment into first domain areas and second domain areas of the alignment with a mask; and (3) selectively bombarding the alignment with an said second particle beam through said mask for creating multiple alignment layer domains without rotation of the substrate as taught by Samant (col. 4 line 65 to col. 5 line 1).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571)

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272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim H. Robert can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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HOAN C. NGUYEN
Examiner
Art Unit 2871



DUNG T. NGUYEN
PRIMARY EXAMINER